

WHAT IS CLAIMED IS:

1. A cover for temperature regulation of an electrical energy storage cell, comprising:

a first layer of thermally conductive material that is shaped to conform to an outer surface of the electrical energy storage cell; and

a second layer of thermally insulating material that is shaped to conform to an outer surface of the first layer.

2. The cover of Claim 1 wherein the electrical energy storage cell produces heat at a hot spot during a short circuit condition and the first layer of material spreads flow of the heat over a portion of the outer surface of the first layer that is larger than the hot spot and the second layer of material retards flow of the heat to an outer surface of the second layer.

3. The cover of Claim 1 wherein the temperature of the outer surface of the second layer has a measured maximum temperature of 130 degrees centigrade or less during the short circuit condition.

4. The cover of Claim 1 wherein the first layer of material comprises aluminum.

5. The cover of Claim 1 wherein the first layer of material comprises copper.

6. The cover of Claim 1 wherein the second layer of material comprises heat-shrink tubing.

7. The cover of Claim 1 wherein the second layer of material comprises elastic material.

8. The cover of Claim 1 wherein the cover comprises two half-shells that each cover one side of a round surface of the energy storage cell.

9. A battery for use in a combustible atmosphere, comprising:

- a plurality of electrical energy storage cells, each cell being covered by a first layer of thermally conductive material that is shaped to conform to an outer surface of the electrical energy storage cell; and being covered by a second layer of thermally insulating material that is shaped to conform to an outer surface of the first layer;

- electrical connection leads;

- a protective device including a fusible link; and

- electrical interconnections that interconnect the plurality of electrical energy storage

cells in a series circuit with the protective device and the electrical connection leads.

10. The battery of Claim 9 further comprising:

a plastic resin shell shaped to receive the plurality of covered cells and the protective device.

11. The battery of Claim 9 wherein the plastic resin shell includes plastic resin separation bars positioned between the cells and the electrical interconnections to reduce shorting.

12. A process of covering an electrical energy storage cell which produces heat during a short circuit condition, comprising:

covering an outer surface of an electrical energy storage cell with a first layer of thermally conductive material that conforms with the outer surface of the electrical energy storage cell;

providing a second layer of thermally insulating material; and

shaping the second layer to conform to an outer surface of the first layer of material.

13. The process of Claim 12 wherein the first layer of material is aluminum.

14. The process of Claim 12 wherein the first layer of material is copper.

15. The process of Claim 12 wherein the second layer of material is heat-shrink tubing.

16. The process of Claim 12 further comprising forming the first layer of material as two half-shell shapes that cover a curved surface of the energy storage cell.